
Deaths After Legally Induced Abortion

A comprehensive approach for determination of abortion-related deaths based on record linkage

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ABORTION MORTALITY in the United States has declined markedly in recent years (1), partly because illegally induced abortions have been replaced by safer legally induced abortions (2). Legal abortions are so safe that Cates and co-workers have stated that legal abortions in the first trimester are nearly nine times safer than carrying the pregnancy to term (3). In identifying abortion deaths, the use of vital statistics as a source depends on the physician's determination of cause of death on the death certificate. For abortion to be mentioned on the death certificate, the certifying physician must know that an abortion has taken place, must warrant it important enough to be mentioned, and then must actually list it on the certificate. In 1974, the New Jersey

State Department of Health began a new system for identifying maternal deaths (4). Instead of merely relying on death certificates, the department began to use annual maternity service reports from all hospital obstetrics services as well as reports from individual persons. With this system, the number of identified maternal deaths for 1974 increased from 16 to 29.

Thus, it appears that the traditional methods of using death certificates to find pregnancy-related deaths can be improved. In Georgia, no deaths were found to be related to abortions performed in 1975, according to cause of death on the death certificates or through information from informal channels. We designed an improved surveillance technique to identify abortion-related deaths in Georgia that may have been missed previously. This technique involved comparing all death certificates of resident women 10-44 years of age with the abortion certificates for all Georgia residents.

Method

Georgia law requires the performing physician to file a certificate for all abortions that occur in Georgia. Also, death certificates are filed for all deaths of Georgia residents, regardless of the State where the death occurred. The following identifying

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items from the abortion certificate were compared with corresponding information from the death certificate.

<i>Item</i>	<i>Percent of completeness</i>
Month, day, and year of birth	197
Maiden last name	44
County of residence	99
Place of birth	71
Race	99
Date of abortion	100
Marital status	98

¹ Year and month of birth were completed on 99 percent of death certificates.

The data items on the death certificates were completed virtually 100 percent of the time; however, the abortion certificate requires maiden last name only (and then only if the patient consents). The matching procedure, therefore, did not depend exclusively upon name.

We compared information on the 19,877 abortions reported in 1975 for women 10-44 years old with the information on the 1,610 deaths of women 10-44 years old that occurred in 1975 or the first 2 months of 1976. Thus, women had a minimum of 2, a maximum of 14, and an average of 8 months' observation. Using four differently sorted lists of abortions, we made at least three manual attempts to match the deaths with the abortions. Data on each deceased woman were compared separately with data on all women having abortions who had the same birth date, then with those having the same name, and then with those having either the same county of residence or the same place of birth. In instances where data were inadequate or questionable, we obtained additional information from the abortion provider. When we determined that a woman who received an abortion subsequently died, the death was investigated further. We obtained additional information from medical examiner's reports, police reports, trial transcripts, physician and hospital records, and the family of the deceased.

With a cohort of 19,877 abortions, one would ordinarily expect a certain number of the women to die of various causes. Given an average period of 8 months' observation and applying 1975 Georgia age- and race-specific death rates, the expected number of deaths is 12.95 with a 95 percent confidence interval (by Poisson distribution) of 6.9 to 22.2. When we applied national abortion death-to-case rates to the same cohort (3), the number of abortion-related deaths was 0.78.



Results

Of the 10 women who had abortions and subsequently died in 1975, the abortions and subsequent deaths of 8 seemed to be unrelated (see table). Two cases, however, warrant additional discussion.

Case No. 1. A 22-year-old woman had an uneventful abortion by dilatation and evacuation at 7 weeks' gestation. She had been intermittently separated from her husband for approximately 10 weeks and had become severely depressed. She attempted to take her life and was admitted to a hospital for psychiatric treatment 5 weeks before the abortion. She left the hospital against medical advice after a week but remained depressed and again attempted unsuccessfully to take her life. At the time of the abortion she displayed no ambivalence and was very firm in her decision to have it. She committed suicide 4 days after the abortion.

Case 3. A 27-year-old woman had chest surgery for severe pectus excavatum at 8 years of age. During surgery she suffered a cardiac arrest that lasted at least 20 minutes; during this time circulation was maintained by open heart massage. Afterwards she led a reasonably normal life, including 3 full-term pregnancies without complication. At age 20 she complained of shortness of breath. Chest X-ray was

Selected characteristics of Georgia residents who died after obtaining abortions in Georgia, 1975, by cause of death

Case No. and cause of death	Age at time of abortion	Race	Gestation, weeks	Interval, abortion to death	Marital status	Autopsy	Abortion procedure
1. Suicide—separation from husband, depression and suicide attempts, and psychiatric hospitalization before abortion	22	White	7	4 days	Separated	No	Dilatation and evacuation
2. (2 abortions): Homicide—perpetrator unknown	24		10	6 months			Dilatation and evacuation
	25	White	4	4 weeks	Married	Yes	Dilatation and evacuation
3. Sudden death, no apparent cause—listed as “coronary occlusion” on death certificate. Possible mild heart disease. S-T changes on EKG.	27	White	10	5 weeks	Married	No	Hysterectomy
4. Homicide—by ex-boyfriend of 5 years (reunited 3 weeks before death.) No obvious motive	22	Black	11	7½ weeks	Separated	Yes	Dilatation and evacuation
5. Homicide—by disgruntled neighbor	23	Black	11	4 months	Separated	Yes	Dilatation and evacuation
6. Accidental—carbon monoxide poisoning in automobile. No evidence of homicide or suicide	17	White	7	7 months	Single	No	Dilatation and evacuation
7. Accidental—fell striking head. Subdural hematoma. History of alcohol withdrawal seizures and increased bleeding tendency	35	Black	10	8 months	Married	Yes	Dilatation and evacuation
8. Suicide—history of psychiatric treatment, old scars on wrists	32	White	16	8 months	Single	Yes	Intra-amniotic prostaglandins
9. Accidental—putting gasoline into car on highway, struck by car	24	White	8	9 months	Married	No	Dilatation and evacuation
10. Metastatic ovarian cancer—undergoing chemotherapy at time of abortion	22	Black	10	11 months	Single	No	Dilatation and evacuation

thought to show some cardiac enlargement and some pulmonary edema. A brief course of diuretics relieved her symptoms. At age 27 she had an abortion by means of a total abdominal hysterectomy with additional indications of decensus of the uterus, pelvic pain, chronic cervicitis, a class III Papanicolaou smear, and cervical biopsy showing atypical squamous metaplasia. In the recovery room, an occasionally irregular pulse of 120 and respirations of 20–24 were noted. An EKG showed a regular sinus rate of 104 and inverted T waves and S-T depression in V₁ through V₅. Serum cholesterol, LDH, and SCOT levels as part of an SMA-12 were normal. A repeat EKG 2 days later showed “possibly a little more S-T” depression. The patient denied any chest pain. Pulse rates of 80–100 and respirations of 20–24 continued for her 5 remaining days in the hospital. Her postoperative course was otherwise uneventful, and she was discharged. She saw no physicians, apparently did well, and quickly resumed her daily activities. Her family members stated, however, that she experienced fairly continuous vaginal bleeding

thereafter. Five weeks after the operation, while en route to a relative’s funeral, she died suddenly while getting out of her car. At no time at home did she complain of syncope, headache, chest pain, shortness of breath, or leg pain. A physician she had seen occasionally listed the cause of death as “coronary occlusion.” No autopsy was performed.

Discussion

At the outset, we did not know whether the identifying information on the abortion certificates would be adequate for matching with the death certificates. We were concerned that some women who were having abortions might not give accurate information about themselves, particularly their names. However, we learned that the name was not really essential for linking the records. Certain factors which helped the matching process were: (a) the large number of variables in addition to name with which to match, (b) the particularly strong matching power of date of birth and county of residence (Georgia has 159), (c) the relatively small number of deaths of

women of reproductive age, and (d) the ability to obtain additional information from the abortion provider in the few instances when more was needed.

Obviously, we cannot say with certainty that we found all post-abortion deaths. It is reassuring to note, however, that the actual number of 10 is close to the 12.95 expected. Moreover, it is not surprising that we found fewer deaths than expected statistically. In general, women who are healthy enough to be sexually active and become pregnant are probably healthier than their counterparts in the general population, although in a few cases (such as case 10) the abortion may actually be performed because of underlying illness. Vessey and associates noted a similar phenomenon of lower than expected mortality in their long-term followup of women who use contraception (5).

It is notable that 8 of the 10 deaths were due to trauma. The expected number of deaths due to trauma was 5.7. Again, it should be remembered that we are looking at a fairly fit population that is less likely to die of nontraumatic disease processes. We are tempted to speculate, however, that women who have abortions may be more likely to take risks (6).

To what extent can these 10 deaths be attributed to the preceding abortions? A fertile mind, of course, could think of a scenario in which any of these deaths would be caused by their respective abortions. For eight of the deaths, however, it does not seem at all reasonable to us to assert that the preceding abortions were contributing events. For the other two cases, the abortions may have contributed to the deaths to some extent. How best to quantify that possible contribution is largely a matter of opinion.

For both cases, much is unknown, and one can point to other factors that may have been more important in leading to death. For instance, case 3 might more properly be designated a hysterectomy death. Even if one attributes both of these deaths directly to abortion, however, it is not inconsistent with the national data. If the Poisson distribution is applied to these data, one would have expected 2 or more deaths 18 percent of the time by chance alone. One death would, of course, be consistent with an expected value of 0.78 death. Thus, the data we obtained by using this more comprehensive technique for surveillance are compatible with the national death-to-case rates. For this reason we believe that it is unlikely that any large number of such deaths are undiscovered at the national level.

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SYNOPSIS

SHELTON, JAMES D. (Agency for International Development) and SCHONBUCHER, ALBERT K.: *Deaths after legally induced abortion: A comprehensive approach for determination of abortion-related deaths based on record linkage*. *Public Health Reports*, Vol. 93, July-August 1978, pp. 375-378.

The sources for determination of abortion-related deaths in Georgia are the cause of death listed on the death certificate and reports from informal reporting channels. Although Georgia residents 10-44 years

of age obtained 19,877 induced abortions in 1975, no deaths related to abortion were found through these two usual sources. To determine the sensitivity of this system, all abortion certificates for 1975 were compared with all death certificates of Georgia females aged 10-44 who died in 1975 and the first 2 months of 1976.

Based on the age and racial distribution of the women who received abortions, approximately 13 deaths (from all causes) would be expected to have subsequently occurred during the period of time studied. The

authors found only 10. From national death-to-case rates for legal abortion, the expected number actually attributable to abortion was 0.78 death. Of the 10 deaths, 2 were potentially related to the previous abortion, but a causal relationship to the preceding abortion was not clearly evident for any of the 10 deaths. The data, therefore, tend to support the assertion that no large numbers of deaths related to abortion are undiscovered and that current measurements of abortion mortality are accurate.